

Amendments to the Claims:

Claims 1-31 (Cancelled)

Please add new claims 32-60 as follow:

32. (New) A reactor comprising at least:

- (a) a reaction area comprising at least one solid-state catalyst; and
- (b) a coolable heat exchanger area comprising at least one housing at least partially accommodating an insert,

wherein the reaction area and the coolable heat exchanger area are in fluid-communication.

33. (New) The reactor according to Claim 32, wherein the insert comprises at least one of the following properties determined according to the test methods described herein:

- (A) a heat pressure quotient $\Lambda 1$ at an empty pipe speed v of 0.485 m/s of greater than $1.11 \text{ W/m}^2\text{/K/(mbar/m)}$;
- (B) a heat pressure quotient $\Lambda 2$ at an empty pipe speed v of 0.728 m/s of greater than $1.53 \text{ W/m}^2\text{/K/(mbar/m)}$;
- (C) a heat pressure quotient $\Lambda 3$ at an empty pipe speed v of 0.970 m/s of greater than $1.81 \text{ W/m}^2\text{/K/(mbar/m)}$; or .
- (D) any combination of any of the preceding.

34. (New) The reactor according to Claim 32, wherein the insert comprises a plurality of elements.

35. (New) The reactor according to Claim 32, wherein the insert comprise a degree of perforation of at least about 30.

36. (New) The reactor according to Claim 34, wherein the elements at least partially comprise a fiber-like material.

37. (New) The reactor according to Claim 34, wherein at least two of the plurality of elements at least partially comprise a fiber-like material formed in one piece.

38. (New) The reactor according to Claim 34, wherein at least a part of the plurality of elements are arranged around a core.

39. (New) The reactor according to Claim 38, wherein the core accommodates at least a part of the plurality of elements.

40. (New) The reactor according to Claim 38, wherein the core comprises at least two longitudinal elements.

41. (New) The reactor according to Claim 40, wherein the at least two longitudinal elements are twisted around each other to form one or more windings.

42. (New) The reactor according to Claim 41, wherein the at least one of the elements is accommodated in the one or more windings.

43. (New) The reactor according to Claim 34, wherein the plurality of elements comprises a wire.

44. (New) The reactor according to Claim 38, wherein the core comprises a wire.
45. (New) The reactor according to Claim 43, wherein the wire comprises a metal wire.
46. (New) The reactor according to Claim 44, wherein the wire comprises a metal wire.
47. (New) The reactor according to Claim 32, wherein the insert at an inner space cross-section of the housing substantially fills this inner space cross-section.
48. (New) The reactor according to Claim 32, wherein the housing comprises a cylindrical inner space.
49. (New) The reactor according to Claim 32, wherein the insert has a cylindrical form.
50. (New) The reactor according to Claim 34, wherein at least a part of the plurality of elements contact an inner wall of the housing.
51. (New) The reactor according to Claim 34, wherein at least a part of the plurality of elements comprise loops.
52. (New) The reactor according to Claim 32, further comprising at least one additional reaction area in fluid-communication with the heat exchanger area.

53. (New) The reactor according to Claim 52, wherein the solid-state catalyst in the reaction area and a further catalyst in the additional reaction area are different.

54. (New) The reactor according to Claim 32, wherein a part of the insert at least partially extends into the reaction area.

55. (New) The reactor according to Claim 54, wherein the part of the insert that extends into the reaction area comprises a catalyst.

56. (New) The reactor according to Claim 32, wherein the reaction area further comprises an additional insert comprising a catalyst.

57. (New) A process for oxidation of a hydrocarbon comprising the steps of:

- (a) communicating a hydrocarbon in a gaseous state to at least one solid-state catalyst of a reaction area of a reactor;
- (b) oxidizing a portion of the hydrocarbon to hydrocarbon product; and
- (c) cooling at least a portion of the a hydrocarbon product by communicating the at least a portion of the a hydrocarbon product to a heat exchanger area comprising an insert,

wherein the insert comprises at least one of the following properties determined according to the test methods described herein:

- (A) a heat pressure quotient $\Lambda 1$ at an empty pipe speed v of 0.485 m/s of greater than $1.11 \text{ W/m}^2/\text{K}/(\text{mbar/m})$;
- (B) a heat pressure quotient $\Lambda 2$ at an empty pipe speed v of 0.728 m/s of greater than $1.53 \text{ W/m}^2/\text{K}/(\text{mbar/m})$;
- (C) a heat pressure quotient $\Lambda 3$ at an empty pipe speed v of 0.970 m/s of greater than $1.81 \text{ W/m}^2/\text{K}/(\text{mbar/m})$; or

(D) any combination of any of the preceding.

58. (New) The process according to Claim 57, wherein the hydrocarbon comprises an unsaturated hydrocarbon.

59. (New) The process according to Claim 57, wherein the hydrocarbon comprises propene.

60. (New) The process according to Claim 59, wherein the oxidized hydrocarbon product comprises acrolein or acrylic acid.